



Problem Solving Solutions



Outline

Scenario 1: Examine Flights in Oakland Oceanic Sector 4

Scenario 2: Analyze United Airlines Flight 57

Scenario 3: Explore the HNL to SFO Traffic Stream

Scenario 4: Load Display GFS Data



Outline

Scenario 1: Examine Flights in Oakland Oceanic Sector 4

Scenario 2: Analyze United Airlines Flight 57

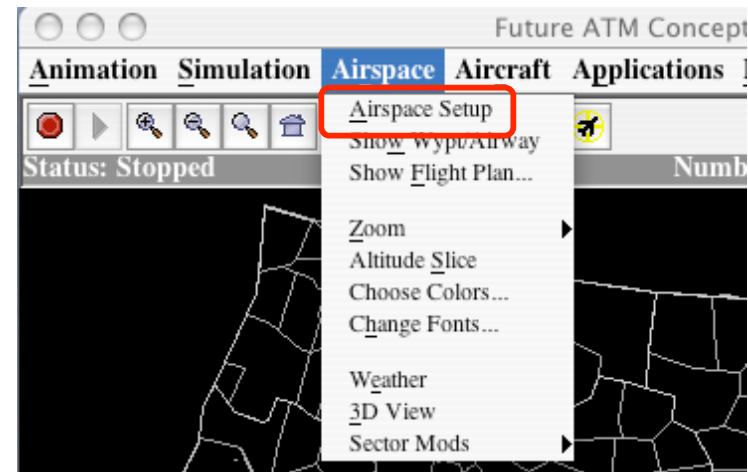
Scenario 3: Explore the HNL to SFO Traffic Stream

Scenario 4: Load Display GFS Data

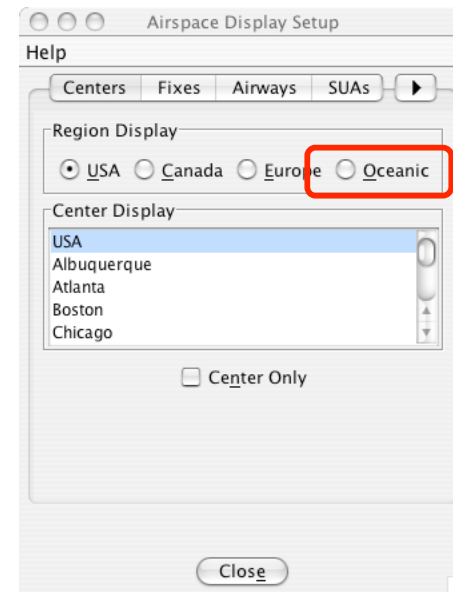


Scenario 1: Examine Flights in Oakland Oceanic Sector 4, *Step 1*

Step 1:
Select the *Airspace Setup*
menu item from the
Airspace menu



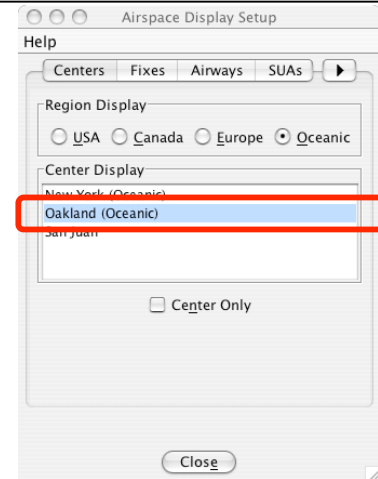
Step 2:
Select the Oceanic radio
button from the “Airspace
Setup” panel



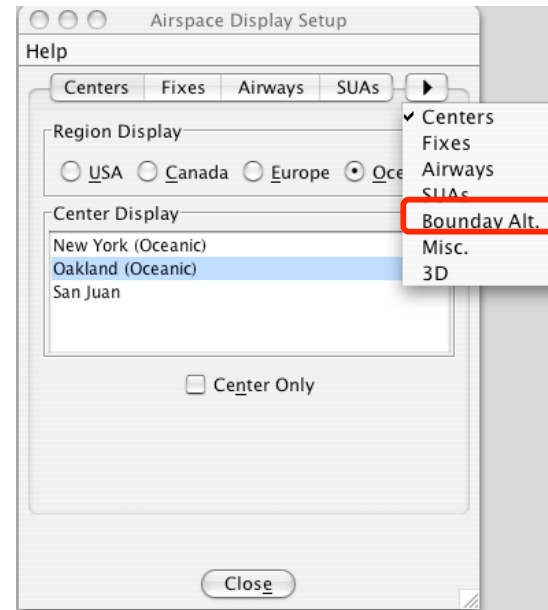


Scenario 1: Examine Flights in Oakland Oceanic Sector 4, *Step 1*

Step 3:
Select Oakland (Oceanic)
from the list of available
Centers



Step 4:
Select the Boundary Alt tab
on the “Airspace Display
Setup” panel

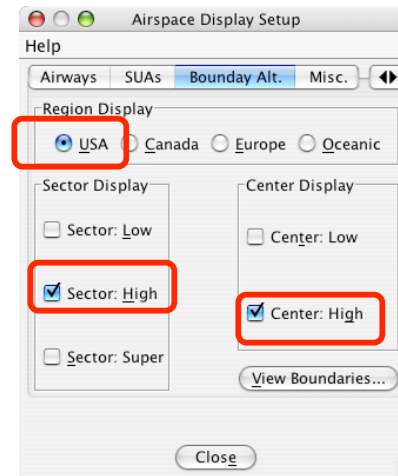




Scenario 1: Examine Flights in Oakland Oceanic Sector 4, *Step 1*

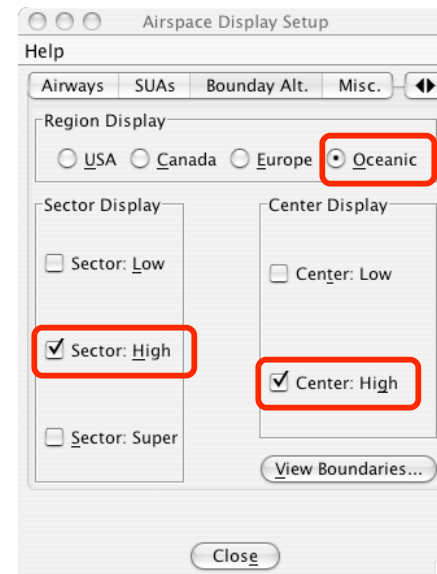
Step 5:

With the “USA” radio button selected, deselect the “Sector:High” and “Center:High” checkboxes



Step 6:

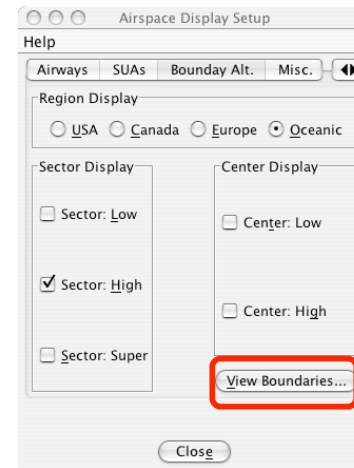
Select the “Oceanic” radio button and select the “Sector:High” checkbox



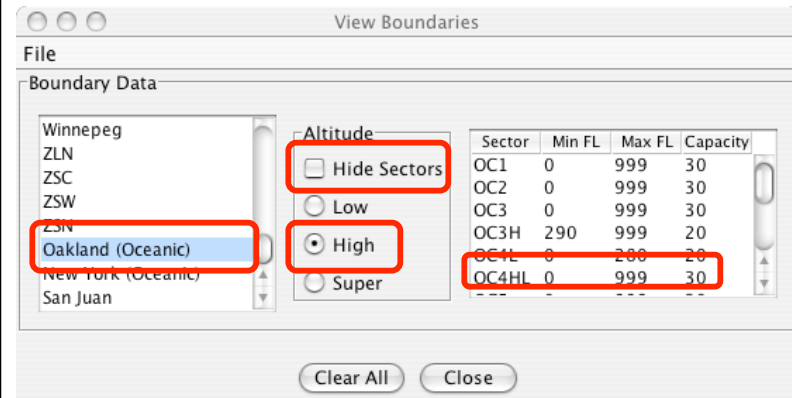


Scenario 1: Examine Flights in Oakland Oceanic Sector 4, *Step 1*

Step 7:
Press the “View Boundaries”
button



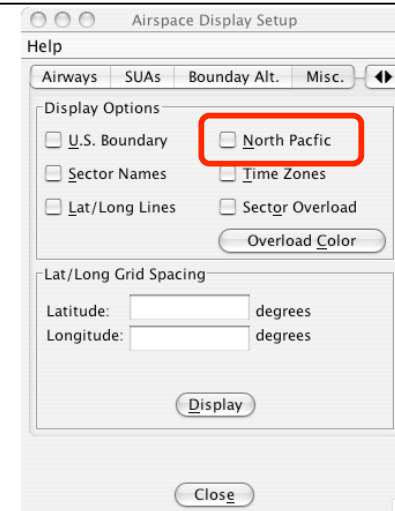
Step 8:
Select the “Oakland
(Oceanic)” list entry, press
the “High” radio button,
select the “Hide Sectors”
checkbox, and select
“OC4HL”





Scenario 1: Examine Flights in Oakland Oceanic Sector 4, *Step 1*

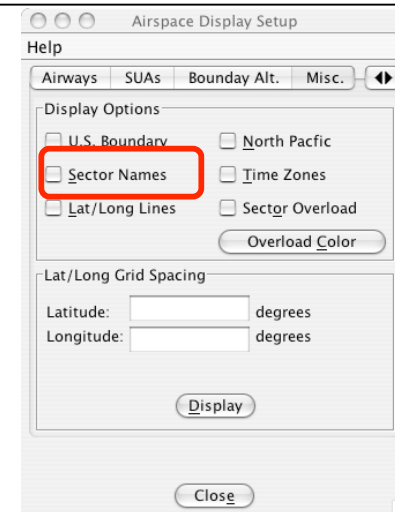
Step 9:
Select the “North Pacific”
checkbox on the “Misc” tab
of the “Airspace Display
Setup” panel.





Scenario 1: Examine Flights in Oakland Oceanic Sector 4, *Step 2*

Step 10:
Select the “Sector Names”
checkbox

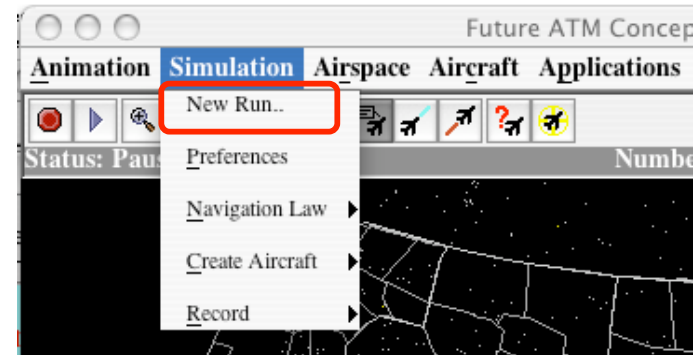




Scenario 1: Examine Flights in Oakland Oceanic Sector 4, *Step 3*

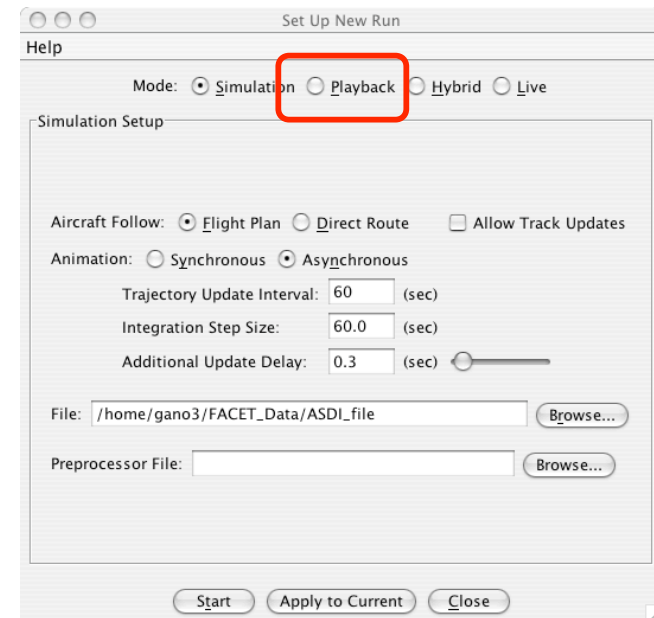
Step 11:

Select the *New Run* menu item from the **Simulation** menu



Step 12:

Select the Playback radio button from the “Set Up New Run” panel.

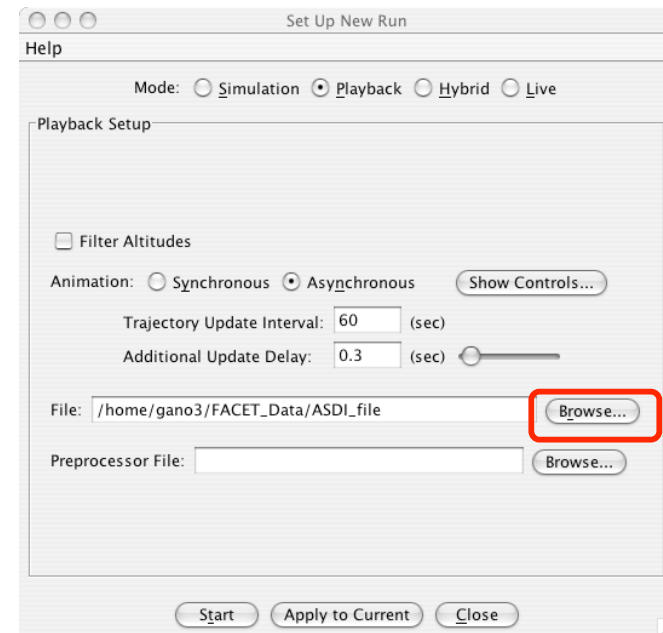




Scenario 1: Examine Flights in Oakland Oceanic Sector 4, *Step 3*

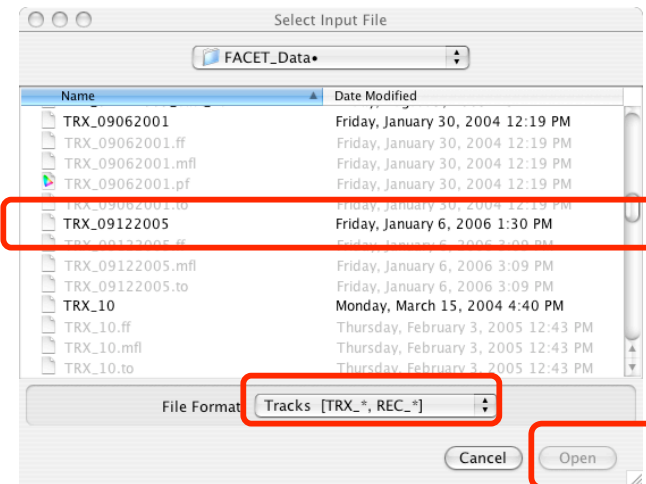
STEP 13:

Set the playback run attributes and select the “Browse” button. By default, none of the attributes should require changing.



STEP 14:

Select the “Tracks” file filter then select the TRX_09122005 input file. After completing these steps press the “Open” button.

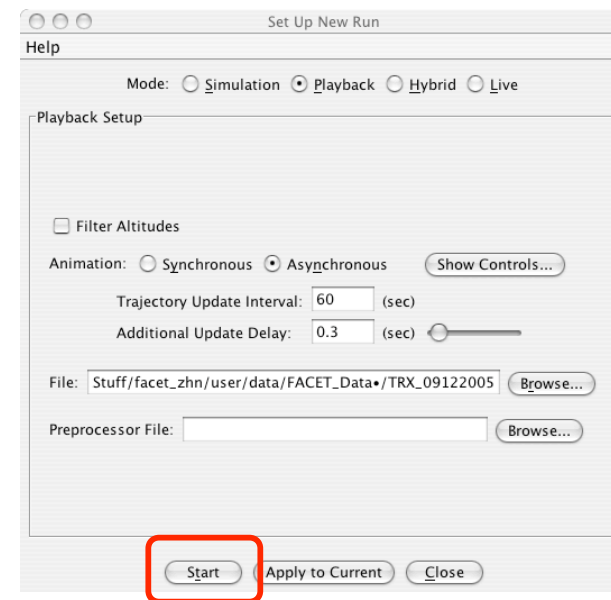




Scenario 1: Examine Flights in Oakland Oceanic Sector 4, *Step 3*

STEP 15:

Press the Start button to initiate the FACET playback session

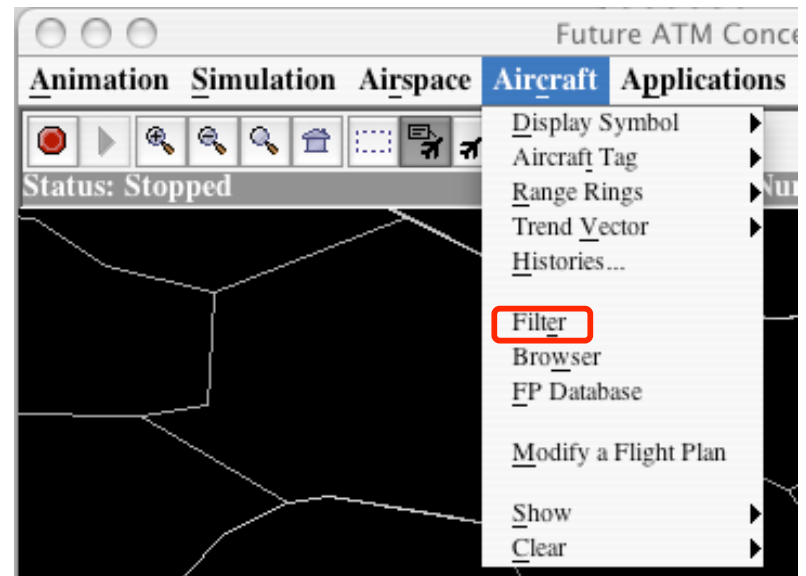




Scenario 1: Examine Flights in Oakland Oceanic Sector 4, *Step 4*

STEP 16:

Select the *Filter* menu item from the **Aircraft** menu





Scenario 1: Examine Flights in Oakland Oceanic Sector 4, *Step 4*

STEP 17:

In the Filter panel, enter OC4HL as the Sector. Also, select the “Show History” check box, deselect the “Show Data Tag” check box, and deselect the “Show Flight Plan” check box.

Aircraft Filter

File Options

Filter Parameters

Aircraft Id: Origin: Destination:
Type: Center: Sector:
Flight Level: Origin Center: Destination Center:
Fix: Jet Route: Flight Plan:
Weight: Equipage: Haul:
Delay:

Filter Attributes

Filter Color: Choose...
Aircraft Symbol:
☒ Show Aircraft
☒ Show History
☒ Show Flight Plan
☐ Show Data Tag

Applied Filters

Filter	Color	Symbol	Aircraft	History	Flight Plan	Data Tag	Aircraft List
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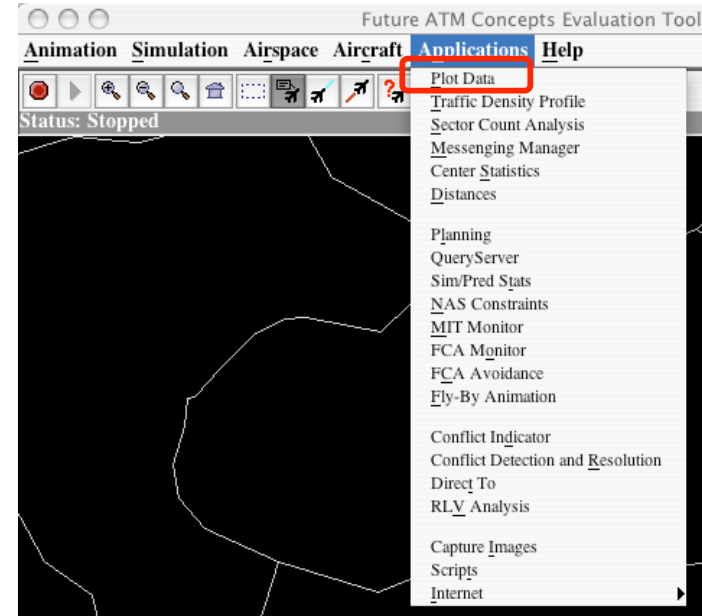
☐ Filter Duplicate Aircraft ☐ Display Filtered Aircraft Only
☐ Filter Out-Of-Bounds Aircraft ☐ Display Legend



Scenario 1: Examine Flights in Oakland Oceanic Sector 4, *Step 5*

STEP 18:

Select the *Plot Data* menu item from the **Application** menu





Scenario 1: Examine Flights in Oakland Oceanic Sector 4, *Step 5*

STEP 19:

Select the “Aircraft in center/sector” radio button then the “Choose” button. Alternatively, steps 20-22 can be bypassed by entering OC4HL in the “center/sector” text field.

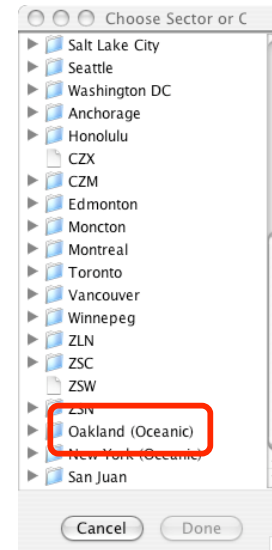
The screenshot shows the 'Plot Data' window with the 'Create New Plot' section. The 'Plot' dropdown is set to 'Number of aircraft vs. time'. Under the 'For' section, the 'Aircraft in center/sector' radio button is selected and highlighted with a red box. Next to it is a 'Choose...' button, also highlighted with a red box. Other options include 'All known aircraft', 'Aircraft over continental US', and 'Aircraft in region: <none>'. The 'Where' section has 'State is flying' selected. Other filters include 'Departure occurred within last update', 'to/from airport', 'No flight plan exists', 'Transitioning from center/sector', 'Flight level is between', and 'Impacted by NOWRAD levels'. A 'Done' button is at the bottom. The 'Current Plots' section on the right is empty.



Scenario 1: Examine Flights in Oakland Oceanic Sector 4, *Step 5*

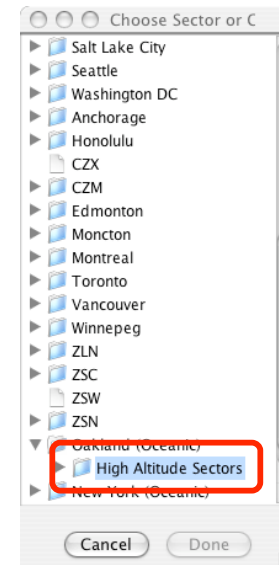
STEP 20:

Open the “Oakland (Oceanic)” folder



STEP 21:

Open the “High Altitude Sectors” folder

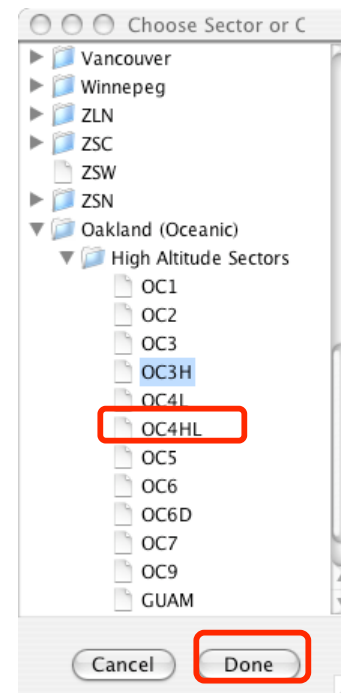




Scenario 1: Examine Flights in Oakland Oceanic Sector 4, *Step 5*

STEP 22:

Select “OC4HL” from the list of sectors and press the “Done” button.





Scenario 1: Examine Flights in Oakland Oceanic Sector 4, *Step 5*

STEP 23:

Press the “Add to new window” button to add this plot to the list of currently implemented plots. Action leads to a blank plot window being displayed.

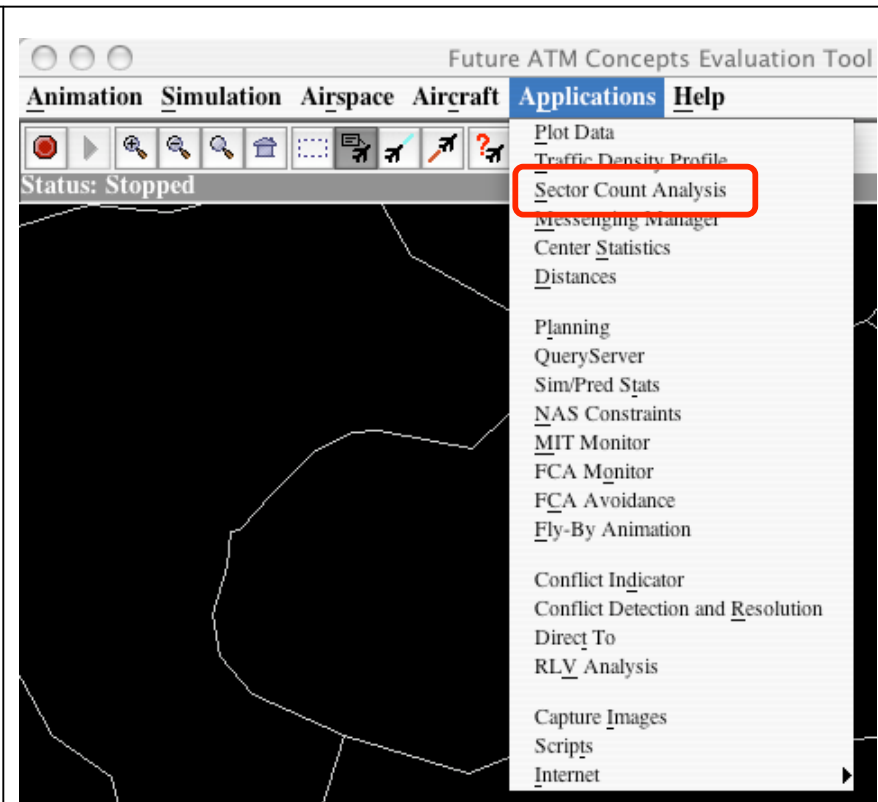
The screenshot shows a software window titled "Plot Data". It has a menu bar with "Load" and "Help". Below the menu bar is a "Create New Plot" section with two tabs: "Calculations" and "Attributes". The "Calculations" tab is active, showing a "Plot" section with a dropdown menu set to "Number of aircraft" and "vs. time". Below this is a "For" section with four radio button options: "All known aircraft", "Aircraft over continental US", "Aircraft in center/sector: OC4HL" (which is selected), and "Aircraft in region: <none>". There are "Choose..." and "Edit..." buttons next to the selected options. Below the "For" section is a "Where" section with several checkboxes: "State is flying" (selected), "Departure" occurred within last update, "to/from airport:" (with a text input field), "No flight plan exists", "Transitioning from center/sector:" (with a text input field and a "Choose..." button), "Flight level is between" (with two text input fields and "and" in between), and "Impacted by NOWRAD levels" (with two text input fields and "through" in between). To the right of the "Create New Plot" section is a "Current Plots" section, which is currently empty. At the bottom of the "Current Plots" section is a "Remove" button. In the center of the window, between the "Create New Plot" and "Current Plots" sections, are three buttons: "Add to new window ->", "Add to selection ->", and "<- View". The "Add to new window ->" button is highlighted with a red rectangular box. At the bottom center of the window is a "Done" button.



Scenario 1: Examine Flights in Oakland Oceanic Sector 4, *Step 6*

Step 24:

Choose *Sector Count Analysis* from the **Applications** menu





Scenario 1: Examine Flights in Oakland Oceanic Sector 4, *Step 6*

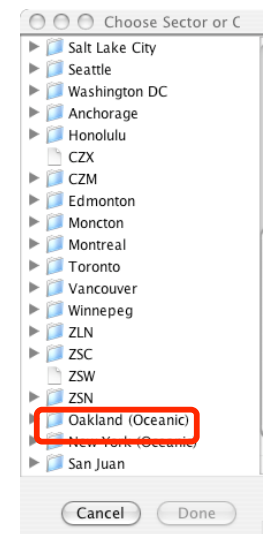
Step 25:

To query the sector count database, press the “Choose” button and select the sector(s) of interest. Alternatively, OC4HL can be entered directly in the “Sector” text field.

The screenshot shows the 'Sector Count Analysis' dialog box. At the top, it says 'Database Status' with a 'Disconnect' button and 'Connected To Database'. Below this are tabs for 'Analysis', 'Query', and 'Admin'. The 'Data Type' is set to 'Actual'. Under 'Input Parameters', the 'Sector' field is set to 'None' and the 'Choose...' button is highlighted with a red rectangle. Other parameters include 'Day Of Week' (Sunday), 'Month' (January), 'Date' (1), 'Year' (2004), and 'Time' (00:00:00 to 24:00:00). At the bottom, there are 'Compute' and 'Close' buttons.

Step 26:

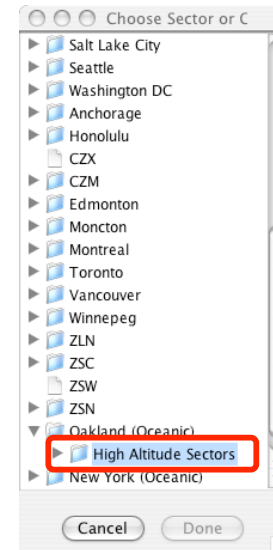
Open the “Oakland (Oceanic)” folder, as an example.



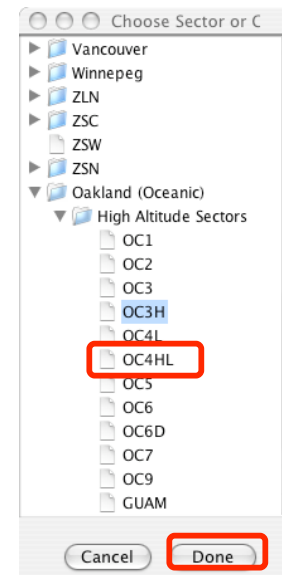


Scenario 1: Examine Flights in Oakland Oceanic Sector 4, *Step 6*

Step 27:
Open the “High Altitude
Sectors” folder.



Step 28:
Select “OC4HL”, for
example, then press the
“Done” button.





Scenario 1: Examine Flights in Oakland Oceanic Sector 4, *Step 6*

Step 29:
Select the “Time” checkbox
and enter “00:00:00” to
“24:00:00” as the time range
then press the “Compute”
button.

The screenshot shows the 'Sector Count Analysis' application window. The 'Database Status' section indicates 'Connected To Database'. The 'Analysis' tab is selected. The 'Data Type' is set to 'Actual'. The 'Input Parameters' section shows 'Sector: OC4HL', 'Low', 'High', and 'Super' radio buttons, and 'Day Of Week: Sunday', 'Month: January', 'Date: 1', and 'Year: 2004'. The 'Time' checkbox is checked, and the time range is set to '00:00:00 to 24:00:00'. The 'Results' section displays 'Average: 11.967', 'Standard Deviation: 6.3132807674922', 'Minimum: 0.0', and 'Maximum: 32.0'. The 'Compute' button is highlighted with a red box.

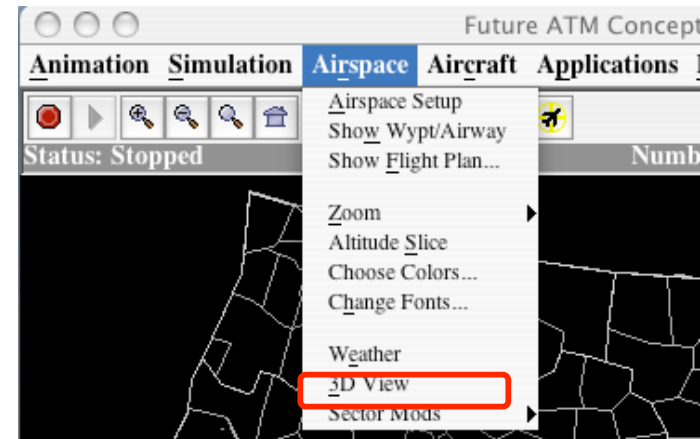
Results	
Average:	11.967
Standard Deviation:	6.3132807674922
Minimum:	0.0
Maximum:	32.0



Scenario 1: Examine Flights in Oakland Oceanic Sector 4, *Step 7*

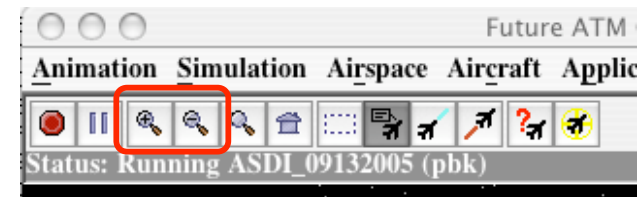
Step 30:

Select the *3D View* menu item from the **Airspace** menu



Step 31:

Use the “Zoom In” and “Zoom Out” toolbar buttons in conjunction with the keyboard arrow keys to adjust the display

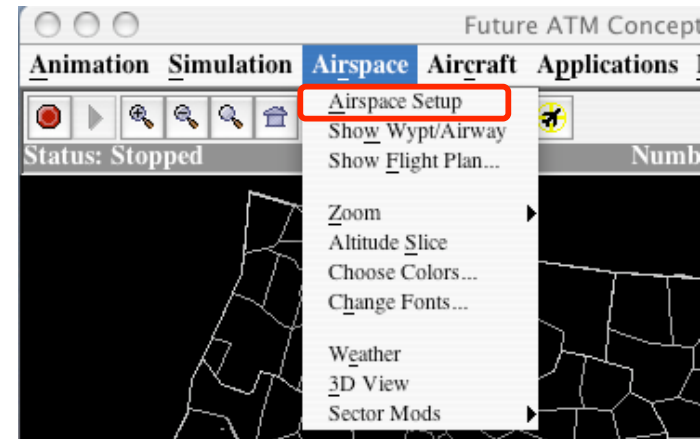




Scenario 1: Examine Flights in Oakland Oceanic Sector 4, Step 7

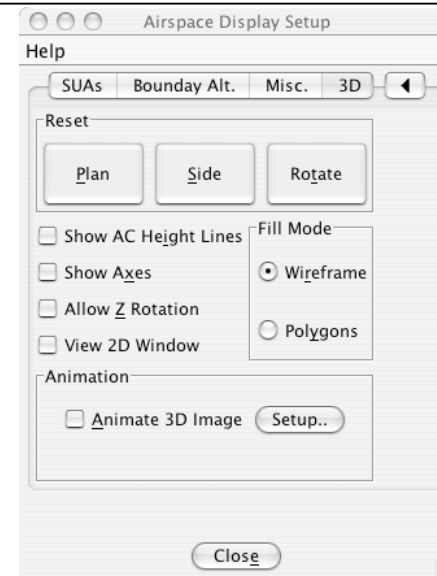
Step 32:

Select the *Airspace Display Setup* menu item from the **Airspace** menu



Step 33:

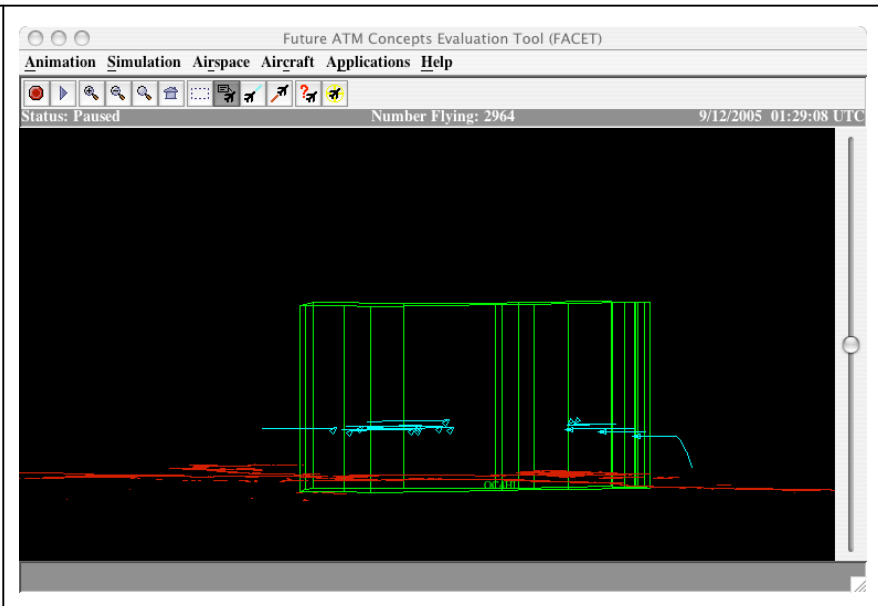
Use the control options on the “3D” tab to adjust the default 3D display settings





Scenario 1: Examine Flights in Oakland Oceanic Sector 4, *Step 7*

The 3D display at approximately 1:30 UTC should look roughly like the image to the right.





Outline

Scenario 1: Examine Flights in Oakland Oceanic Sector 4

Scenario 2: Analyze United Airlines Flight 57

Scenario 3: Explore the HNL to SFO Traffic Stream

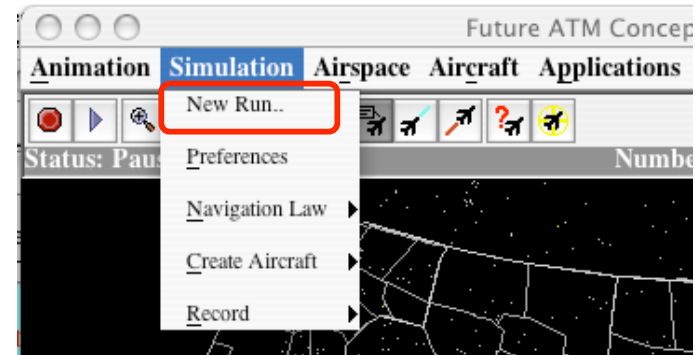
Scenario 4: Load Display GFS Data



Scenario 2: Analyze United Airlines Flight 57, *Step 1*

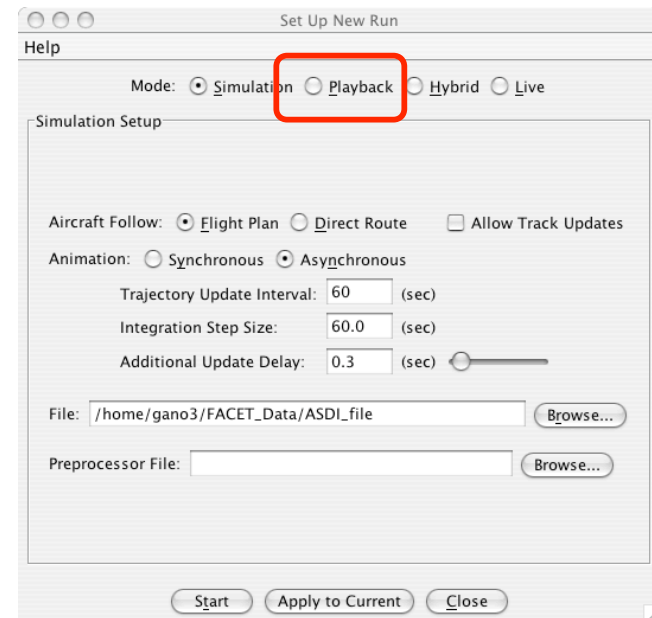
Step 1:

Select the *New Run* menu item from the **Simulation** menu



Step 2:

Select the Playback radio button from the "Set Up New Run" panel.

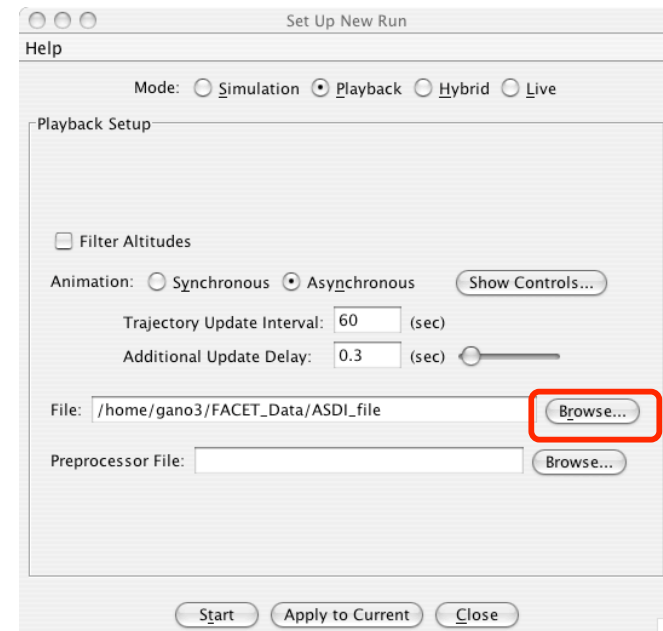




Scenario 2: Analyze United Airlines Flight 57, *Step 1*

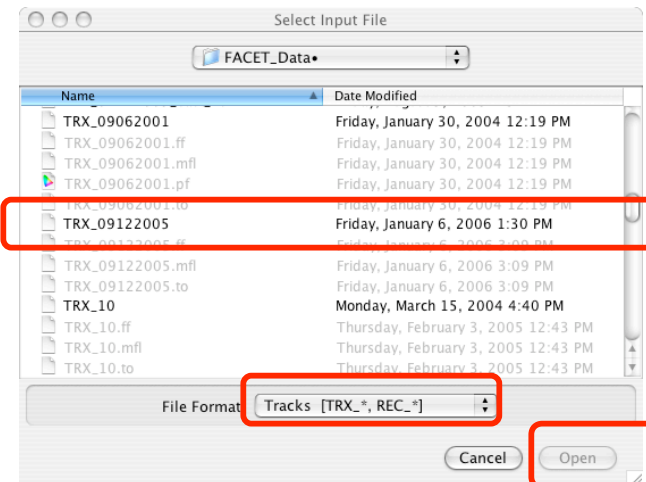
STEP 3:

Set the playback run attributes and select the “Browse” button. By default, none of the attributes should require changing.



STEP 4:

Select the “Tracks” file filter then select the TRX_09122005 input file. After completing these steps press the “Open” button.

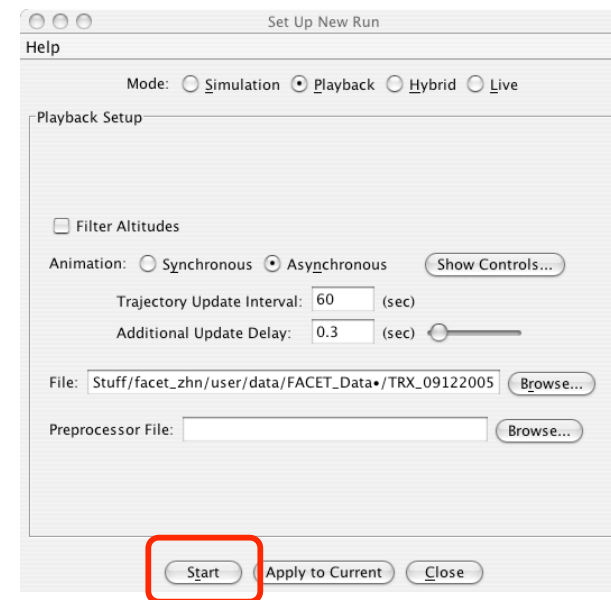




Scenario 2: Analyze United Airlines Flight 57, *Step 1*

STEP 15:

Press the Start button to initiate the FACET playback session

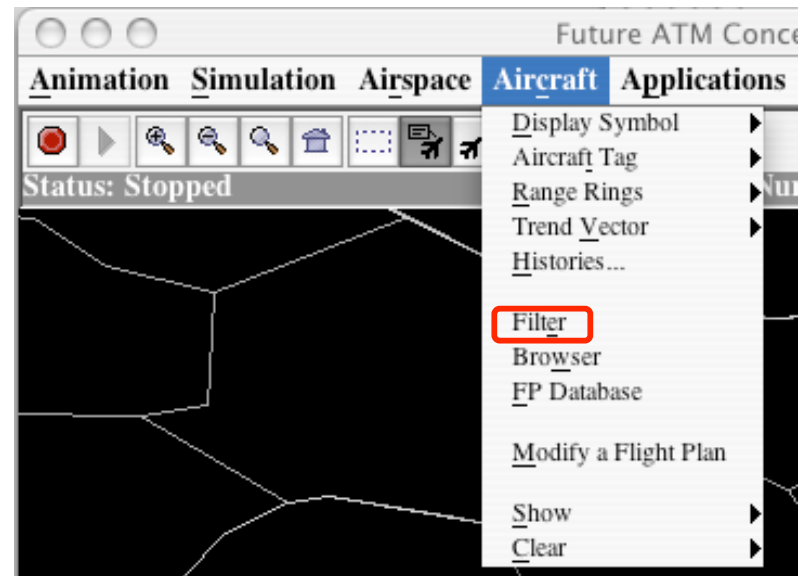




Scenario 2: Analyze United Airlines Flight 57, *Step 2*

STEP 6:

Select the *Filter* menu item from the **Aircraft** menu





Scenario 2: Analyze United Airlines Flight 57, *Step 2*

STEP 7:

In the Filter panel, enter UAL57 as the Aircraft Id, select the “Show History” checkbox, de-select the “Show Flight Plan” checkbox, and press the “Add Filter” button.

The screenshot shows the 'Aircraft Filter' dialog box with the following settings:

- Filter Parameters:**
 - Aircraft Id: UAL57
 - Origin: [Empty]
 - Destination: [Empty]
 - Type: [Empty]
 - Center: [Empty]
 - Sector: [Empty]
 - Flight Level: [Empty]
 - Origin Center: [Empty]
 - Destination Center: [Empty]
 - Fix: [Empty]
 - Jet Route: [Empty]
 - Flight Plan: [Empty]
 - Weight: [Empty]
 - Equipment: [Empty]
 - Haul: [Empty]
 - Delay: [Empty]
- Filter Attributes:**
 - Filter Color: [Cyan] Choose...
 - Aircraft Symbol: Triangle
 - ☒ Show Aircraft
 - ☒ Show History
 - ☐ Show Flight Plan
 - ☐ Show Data Tag
 - Add Filter
- Applied Filters:**

Filter	Color	Symbol	Aircraft	History	Flight Plan	Data Tag	Aircraft List
--------	-------	--------	----------	---------	-------------	----------	---------------

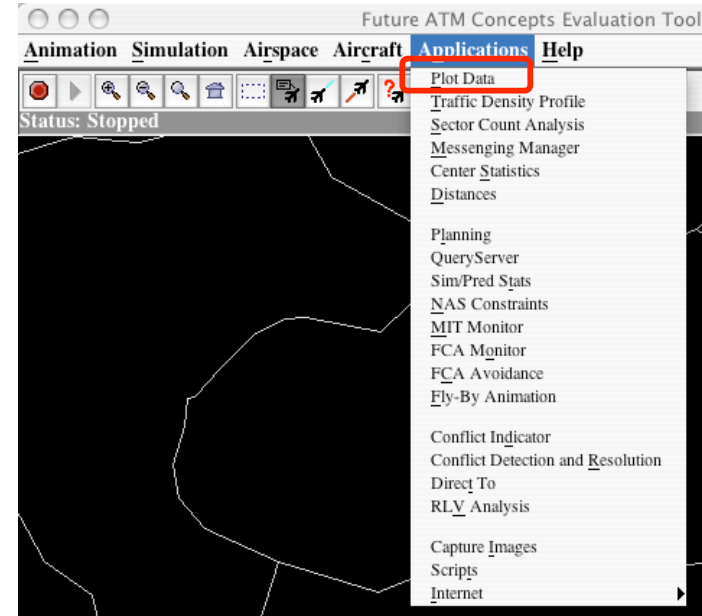
 - ☐ Filter Duplicate Aircraft
 - ☐ Display Filtered Aircraft Only
 - ☐ Filter Out-Of-Bounds Aircraft
 - ☐ Display Legend
 - Remove Filter
- Close



Scenario 2: Analyze United Airlines Flight 57, *Step 3*

STEP 8:

Select the *Plot Data* menu item from the **Application** menu

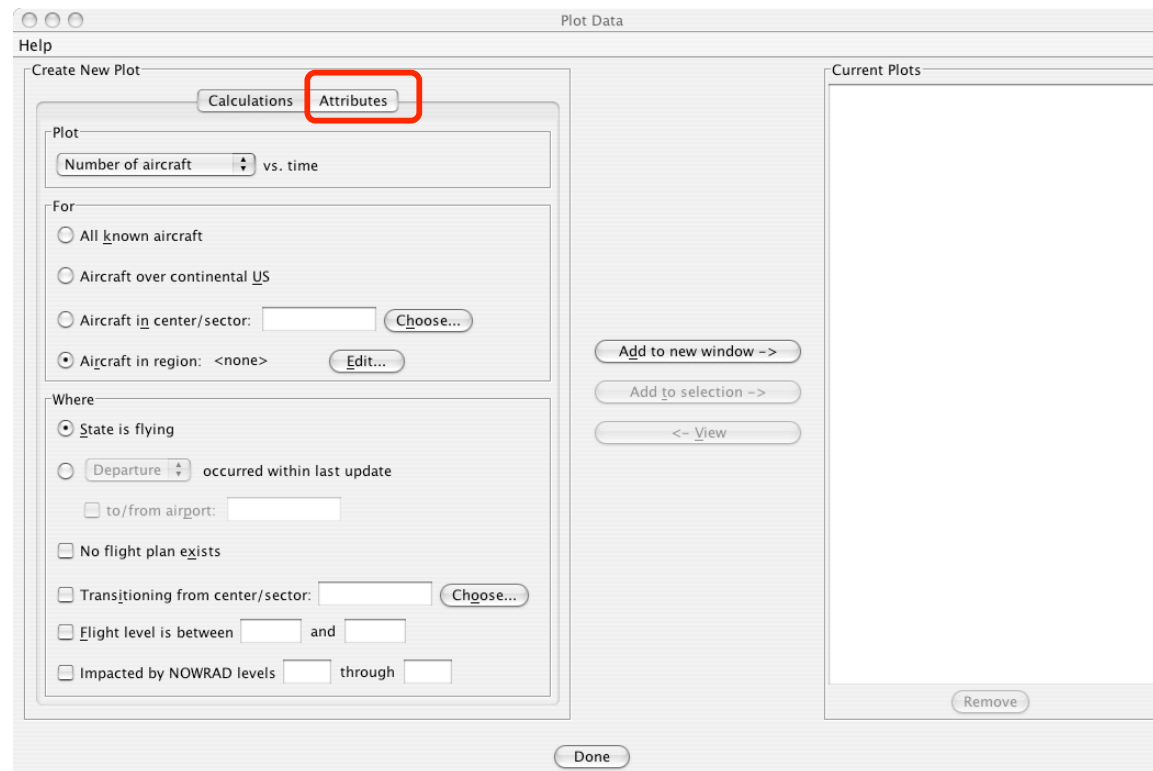




Scenario 2: Analyze United Airlines Flight 57, *Step 3*

STEP 9:

Select the “Attributes” tab.

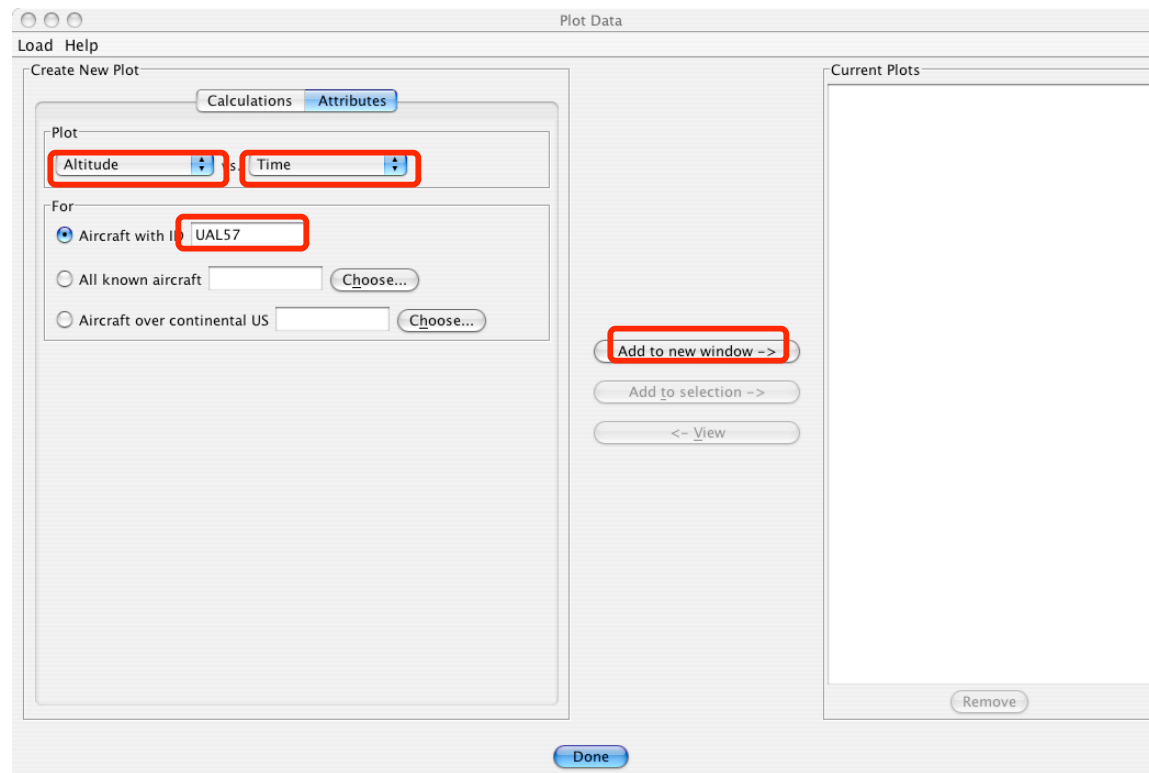




Scenario 2: Analyze United Airlines Flight 57, *Step 3*

STEP 9:

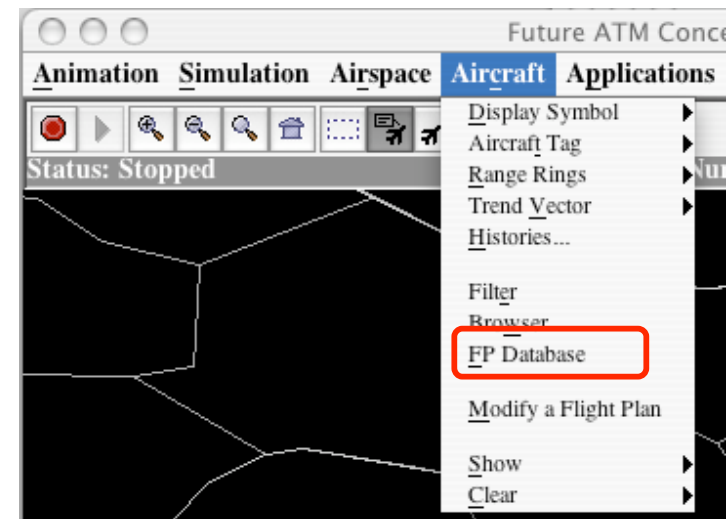
Select “Altitude” and “Time” as the attributes to plot, enter “UAL57” as the aircraft id, and press the “Add to new window” button. Repeat these steps with “Ground Speed” and “Time” as the attributes to display.





Scenario 2: Analyze United Airlines Flight 57, *Step 4*

Step 10:
Choose *FP Database* from the
Aircraft menu





Scenario 2: Analyze United Airlines Flight 57, Step 4

Step 11:

(a) Enter UAL57 as the Acid,
(b) deselect the “Flight Plan”
column entry, (c) select
UAL57 from the query list,
(d) select the “Display
selected Flight Plans” and
“Display Selected Histories”
checkboxes, then (e) press
the “Compute event statistics
for selected flights”
checkbox.

Flight Plan Database

Help

Disconnect Status: Connected to database Close

Store to database Configure... Configure cleanup... Save database to file...

Query

AcID: UAL57 Orig: Dest: Type:

Flight plan:

Date/Time Range: MM DD YYYY HH MM SS UTC to MM DD YYYY HH MM SS UTC Search

# Toffs	AcID	Flight Plan
0	UAL57	KLAX./BEBOP.R464.8ITTA.PHNL
0	UAL57	KLAX./BEBOP.R464.8ITTA.MAGGI3.PHNL
0	UAL57	KLAX./DIALO.R576.DENNS.MAGGI3.PHNL
0	UAL57	KLAX./DINTY.R576.DENNS.MAGGI3.PHNL
0	UAL57	KLAX./DINTY.R576.DIALO.R576.DENNS.MAGGI3.PHNL
0	UAL57	KLAX./DINTY.R576.DONER.R576.DENNS.MAGGI3.PHNL
0	UAL57	KLAX./DONER.R576.DENNS.MAGGI3.PHNL
0	UAL57	KLAX./PICKY.R578.FONZA.R578.FITES.LNY.JULLE4.PHNL
0	UAL57	KLAX./FONZA.R578.FITES.R578.DEREC.V21.LNY.JULLE4.PHNL

Columns: ☒ AcID ☐ FACET ID ☐ Orig ☐ Dest ☐ Type ☒ Flight plan 10 rows

Auto-refresh every 5 minutes Save table to file...

☒ Display selected flight plans ☒ Display selected histories Color ☐ Show History Route Markers

☒ Compute event statistics for selected flights

General Sector Entries

Name	# hits	Min	Max	Mean	Std. dev
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View list... View histogram...



Outline

Scenario 1: Examine Flights in Oakland Oceanic Sector 4

Scenario 2: Analyze United Airlines Flight 57

Scenario 3: Explore the HNL to SFO Traffic Stream

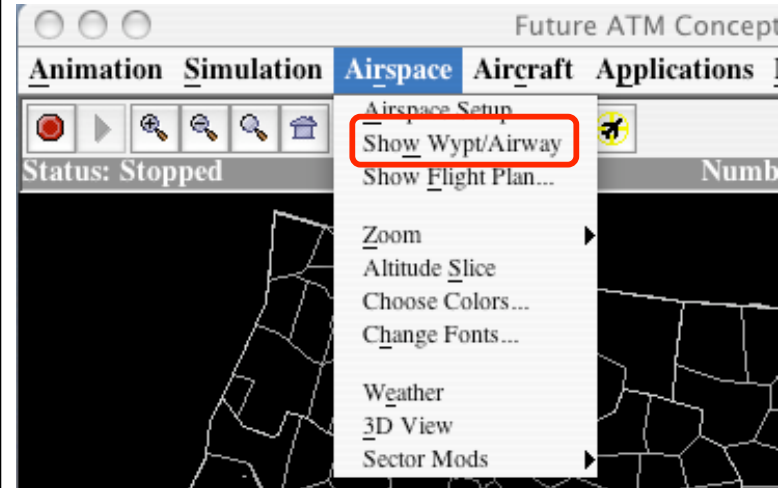
Scenario 4: Load Display GFS Data



Scenario 3: Explore the HNL to SFO Traffic Stream, *Step 1*

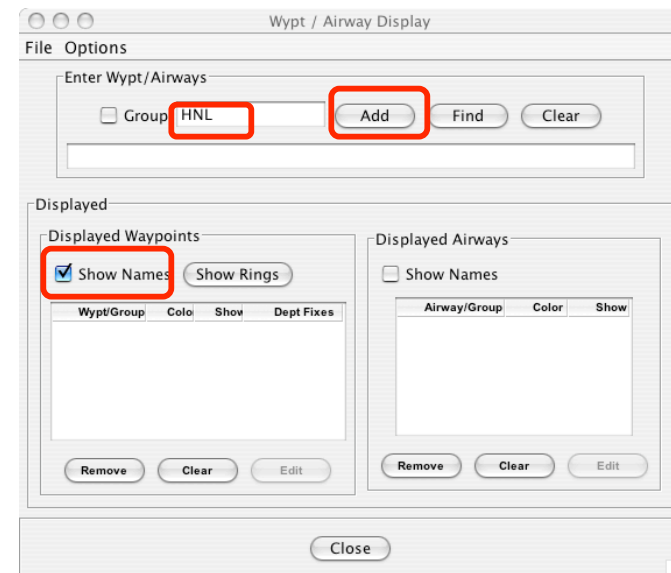
STEP 1:

Select the *Show Wypt/Airway* menu item from the **Airspace** menu.



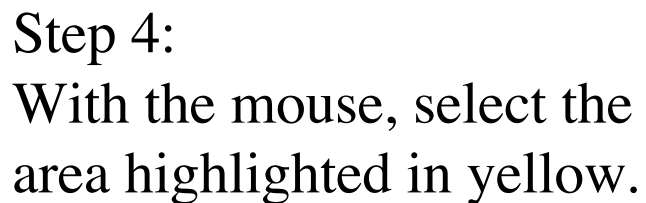
STEP 2:

Enter HNL in the Wypt/ Airways field, press the “Add” button, and select the “Show Names” checkbox. Repeat for SFO.





Step 3:
Press the “Select Zoom”
toolbar button to begin
focusing the display on the
Central East Pacific

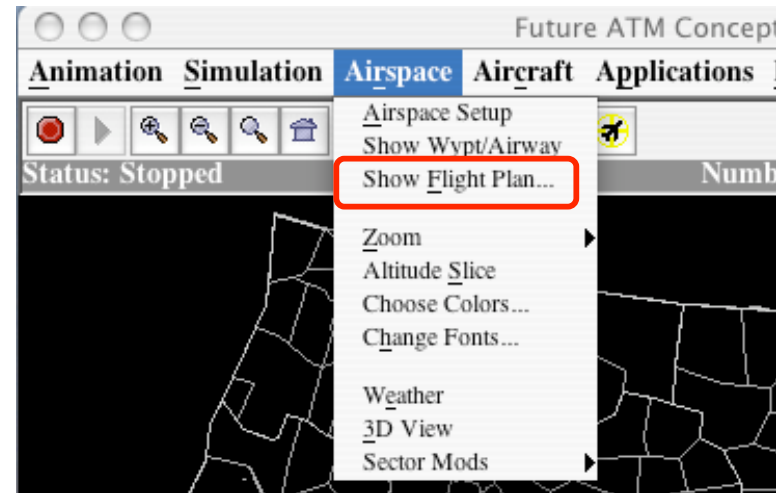




Scenario 3: Explore the HNL to SFO Traffic Stream, *Step 3*

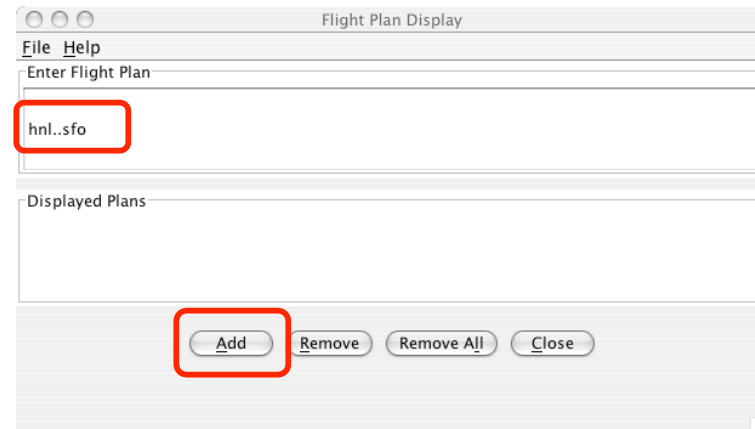
Step 5:

Select the *Show Flight Plan* menu item from the **Airspace** menu



Step 6:

Enter “HNL..SFO” in the flight plan field and press the “Add” button.

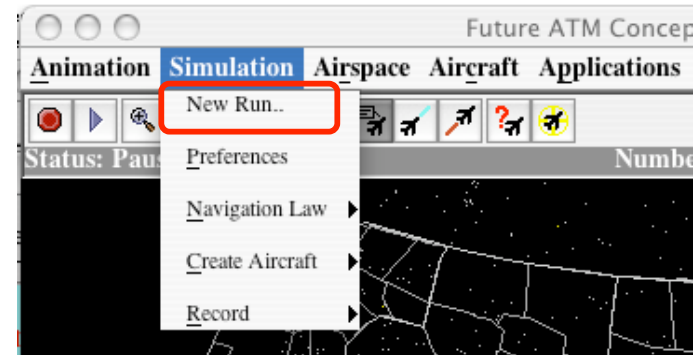




Scenario 3: Explore the HNL to SFO Traffic Stream, *Step 4*

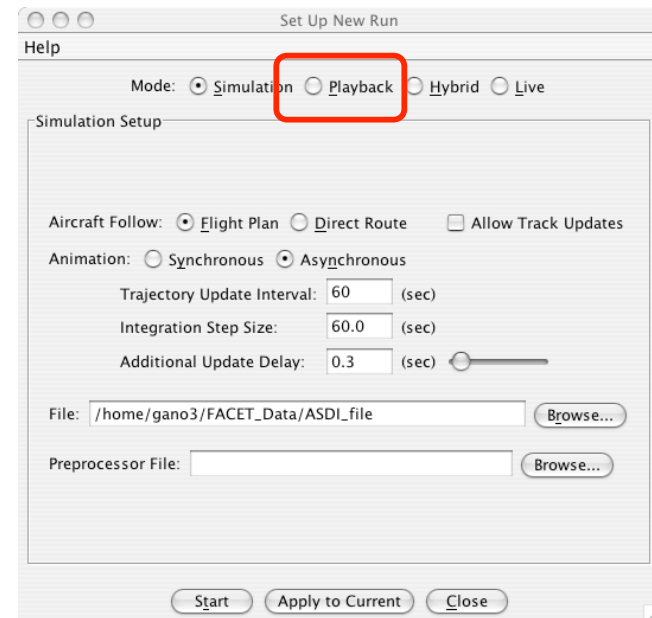
Step 7:

Select the *New Run* menu item from the **Simulation** menu



Step 8:

Select the Playback radio button from the “Set Up New Run” panel.

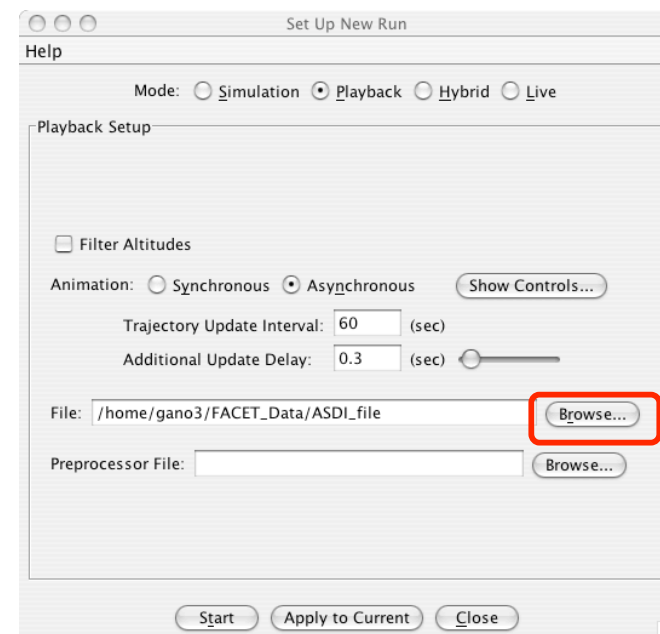




Scenario 3: Explore the HNL to SFO Traffic Stream, *Step 4*

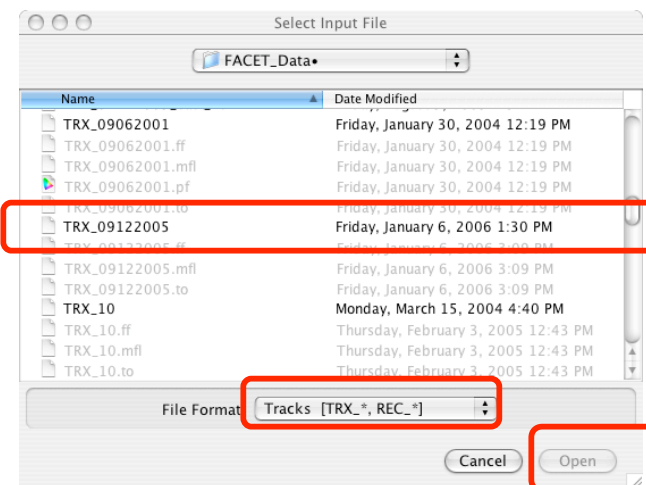
STEP 9:

Set the playback run attributes and select the “Browse” button. By default, none of the attributes should require changing.



STEP 10:

Select the “Tracks” file filter then select the TRX_09122005 input file. After completing these steps press the “Open” button.

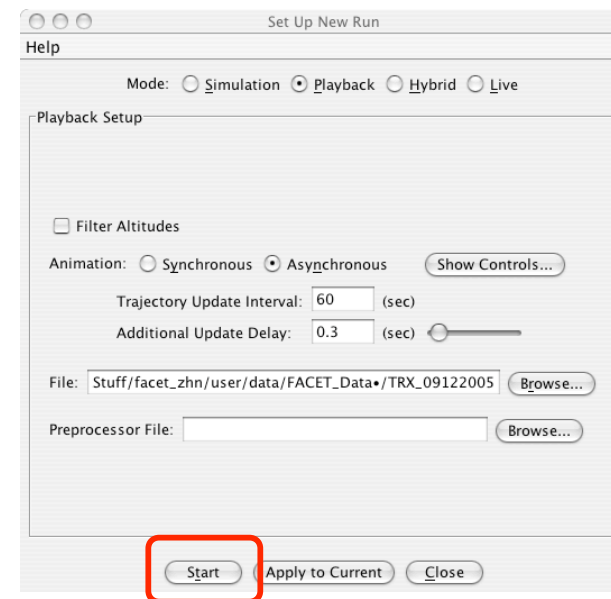




Scenario 3: Explore the HNL to SFO Traffic Stream, *Step 4*

STEP 11:

Press the Start button to initiate the FACET playback session

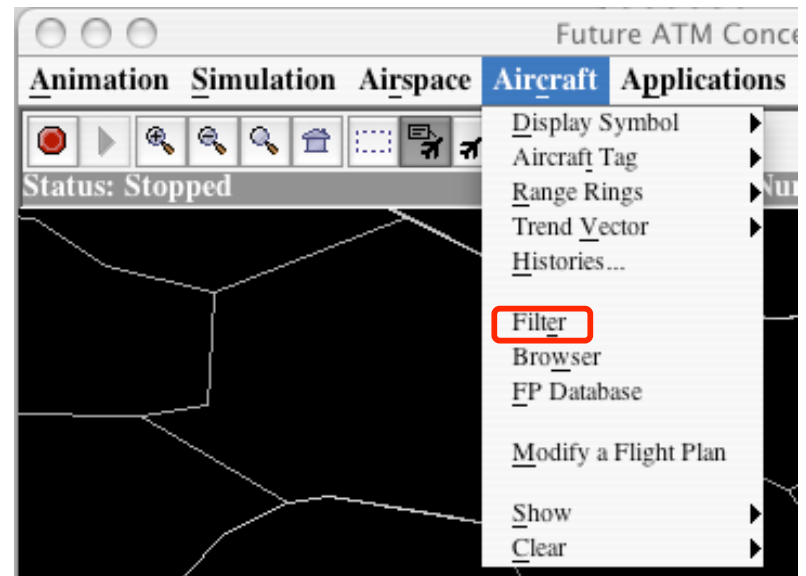




Scenario 3: Explore the HNL to SFO Traffic Stream, *Step 5*

STEP 12:

Select the *Filter* menu item from the **Aircraft** menu





Scenario 3: Explore the HNL to SFO Traffic Stream, *Step 5*

STEP 13:

In the Filter panel, enter HNL in the Origin field, SFO in the Destination field, select the “Show History” checkbox, and press the “Add Filter” button.

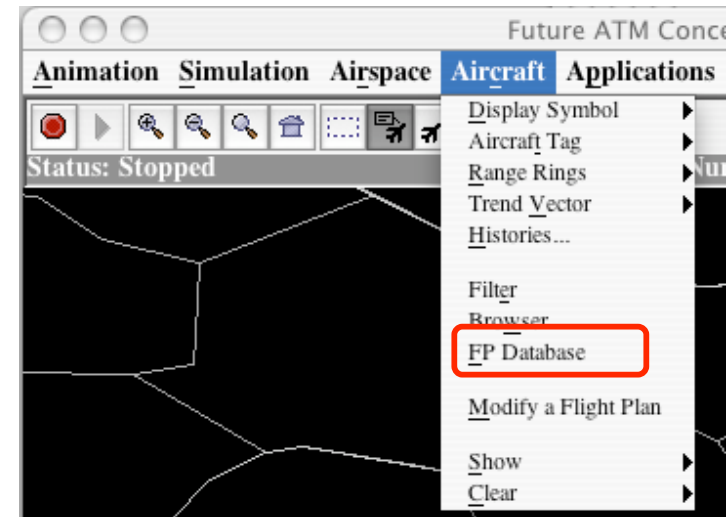
The screenshot shows the 'Aircraft Filter' dialog box with the following settings:

- Filter Parameters:**
 - Origin: HNL
 - Destination: SFO
- Filter Attributes:**
 - Filter Color: Cyan
 - Aircraft Symbol: Triangle
 - ☒ Show History
 - ☐ Show Aircraft
 - ☐ Show Flight Plan
 - ☐ Show Data Tag
- Applied Filters:**
 - Filter: (empty)
 - Color: Cyan
 - Symbol: Triangle
 - Aircraft: (empty)
 - History: (empty)
 - Flight Plan: (empty)
 - Data Tag: (empty)
 - Aircraft List: (empty)
- Buttons:** Add Filter, Remove Filter, Close



Scenario 3: Explore the HNL to SFO Traffic Stream, *Step 6*

Step 10:
Choose *FP Database* from the
Aircraft menu





Scenario 3: Explore the HNL to SFO Traffic Stream, *Step 6*

Step 11:

(a) Enter HNL in the Orig field, (b) SFO in the Dest field, (c) deselect the “Flight Plan” column entry, (d) select all entries in the query list, (e) select the “Display selected Flight Plans”, “Display Selected Histories” checkboxes, and press the “Compute event statistics for selected flights” checkboxes.

The screenshot shows the 'Flight Plan Database' application window. The 'Query' section has 'Orig' set to 'HNL' and 'Dest' set to 'SFO'. The 'Flight plan' column is deselected. The 'Columns' section shows 'AcID' selected. The 'Display selected flight plans' and 'Display selected histories' checkboxes are checked. The 'Compute event statistics for selected flights' checkbox is also checked. The 'General' tab is active, showing a table of flight data.

Name	# hits	Min	Max	Mean	Std. dev
OC4HL	24	01:33	23:54	10:59	06:30
ZHN03	4	07:57	09:20	08:33	00:34
ZHN07	5	08:05	18:30	10:39	04:25
ZOA12	3	03:16	12:35	06:23	05:22
ZOA13	1	05:11	05:11	05:11	-



Outline

Scenario 1: Examine Flights in Oakland Oceanic Sector 4

Scenario 2: Analyze United Airlines Flight 57

Scenario 3: Explore the HNL to SFO Traffic Stream

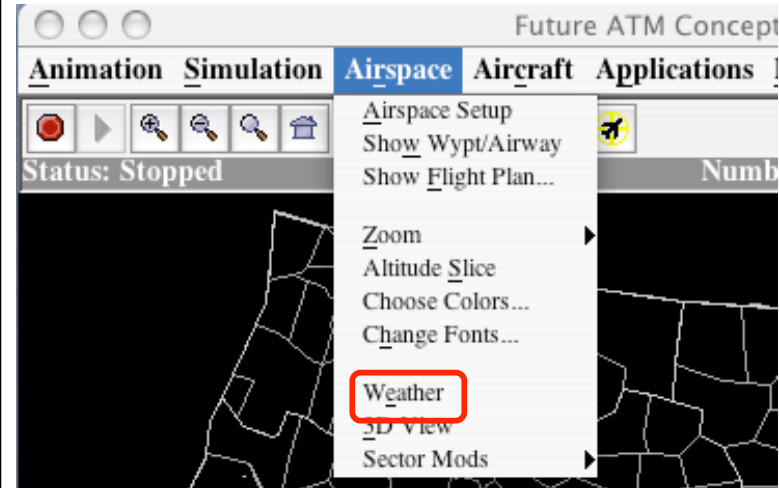
Scenario 4: Load Display GFS Data



Scenario 4: Load/Display GFS Data, *Step 1*

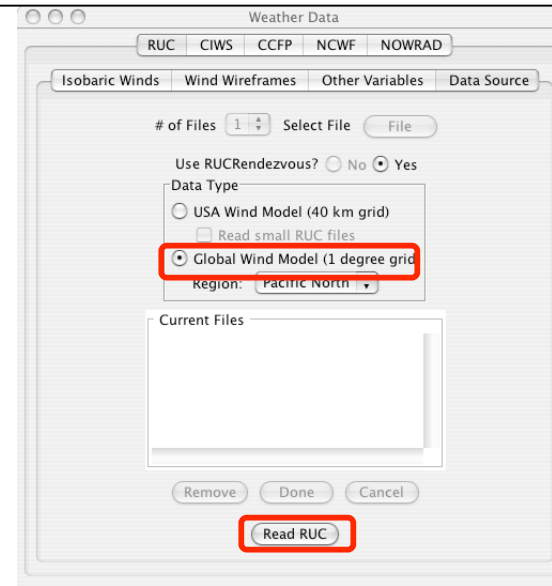
STEP 1:

Select the *Weather* menu item from the **Airspace** menu.



STEP 2:

Select the “Global Wind Model” radio button and press the “Read RUC” button.

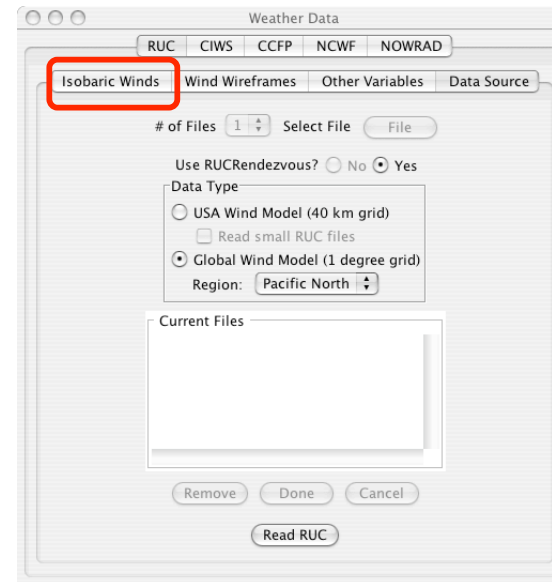




Scenario 4: Load/Display GFS Data, *Step 2*

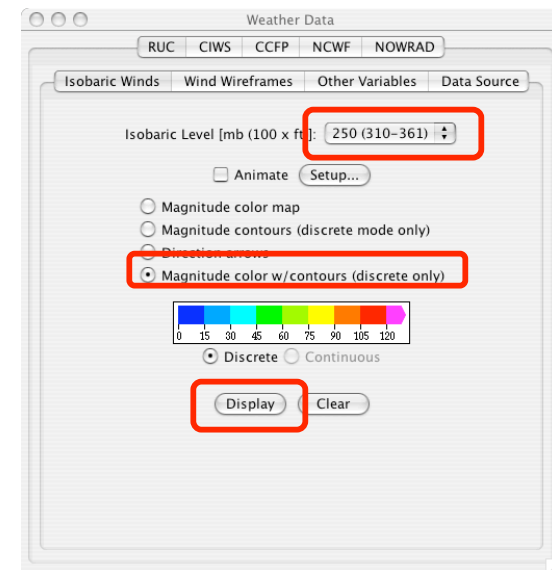
STEP 3:

Select the “Isobaric Winds” tab.



STEP 4:

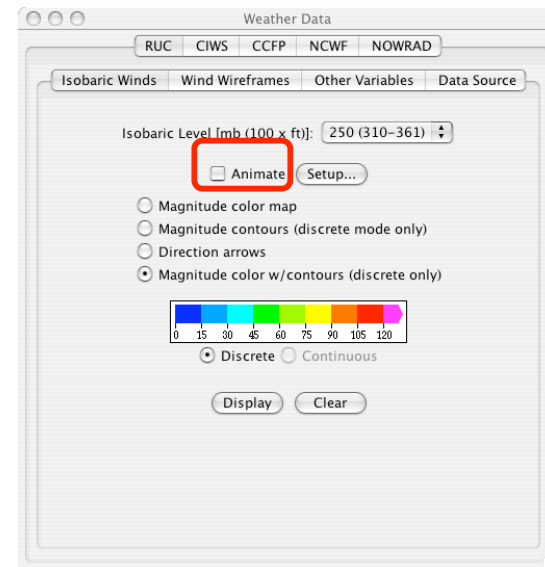
(a) Select the 250 mb item from the isobaric level list,
(b) select the “Magnitude color w/contours” radio button, and (c) press the “Display” button.





Scenario 4: Load/Display GFS Data, *Step 3*

STEP 5:
Select the “Animate”
checkbox.

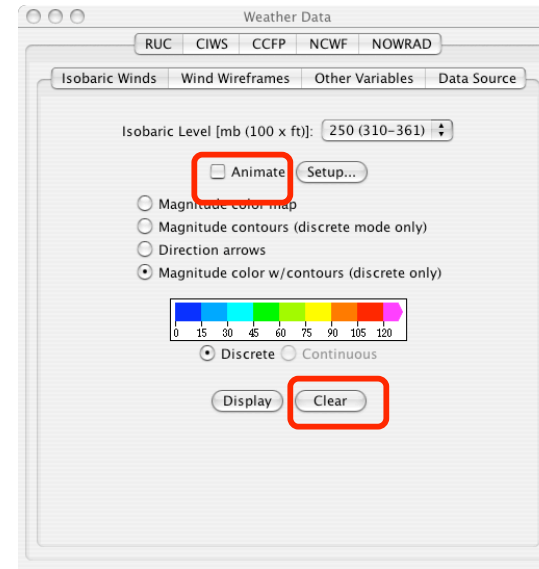




Scenario 4: Load/Display GFS Data, *Step 4*

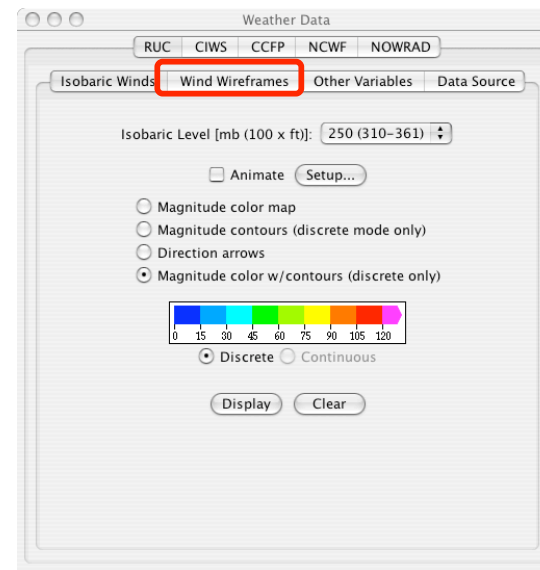
STEP 6:

De-select the “Animate” checkbox if necessary and press the “Clear” button.



STEP 7:

Select the “Wind Wireframes” tab.





Scenario 4: Load/Display GFS Data, *Step 4*

STEP 8:

Select the “>90” threshold level and press the “Display” button.

